Divine Word International Journal of Management and Humanities 4(3)(2025) 1927-1940

Research in Management and Humanities

DWIJMH VOL. 4 NO. 3 (2025) ISSN: 2980-4817

Available online at www.dwijmh.org
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Integrating AI in learning process: Motivations, adjustments, challenges, effectiveness, limitations, effects and concerns

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A R T I C L E I N F O

Article history:
Received: June 25, 2025
Received in rev. form. July 15, 2025
Accepted: August 20, 2025
Published: September 10, 2025

Keywords: ***Artificial intelligence, pedagogical tool, teaching and learning process, professional development. personalized learning***

A B S T R A C T

This study defined the strategies and challenges of the instructors in the integration of artificial intelligence tools in teaching from the School of Arts, Sciences, and Education and School of Engineering, Architecture, and Information Technology of the Divine Word College of Laoag. Using a phenomenological research design, specifically descriptive phenomenology, the study provides an in-depth exploration of the lived experiences of the ten instructors of the Divine Word College of Laoag focusing on their strategies employed and challenges encountered. Data were gathered through online interview questionnaires via Google forms, analyzed using thematic analysis to identify key patterns and themes. It was found to have significant challenges which include overreliance to artificial intelligence, lack of professional training in the use of artificial intelligence, and even the cost and access of artificial intelligence. In response, instructors employed strategies in the form of motivations and adjustments such as enhancing in class learning, improve teaching experiences, and even enhancing student participation and personalized learning. The study gives emphasis the need to have professional development on the use of artificial intelligence tools in integrating them in the teaching-learning process, a need to ensure data protection in collecting information from the students, and ensuring to have an equitable and inclusive access to artificial intelligence tools that are cost efficient.

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JEL Classification: I21

Introduction

With the emergence of Artificial Intelligence (AI) in so many platforms already became a fad. Public and private schools, state universities and colleges, and other institutions of education are already integrating AI in teaching. The integration of AI in teaching made a great shift in the sector of education specifically to higher education institutions where technology played a vital role. The use of AI is making a transformation into the pedagogical practices of instructors by providing opportunities and enhancing the teaching-learning process inside the classroom.

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Based on the up-to-date studies, AI can support personalized learning, automate tasks, and offer real-time feedback (Holmes et al., 2021). This implies that AI can really support the teaching and learning process inside the classroom. The successful integration of AI in teaching is based on how the instructors are digitally literate, the support of the institution toward this action, and their enthusiasm in doing this action. However, its integration into the pedagogy also raises complex issues, including concerns over data privacy, academic integrity, loss of human touch in teaching, and the need for digital competence among faculty members (Smutny & Schreiberova 2020).

Likewise, based on the studies presented, faculty attitudes toward AI integration are shaped by a variety of factors, including prior exposure to technology, institutional policies, perceived usefulness, ease of use, and ethical considerations. Some instructors view AI as a valuable tool that complements traditional pedagogical methods, while others express skepticism or discomfort due to unfamiliarity or fears of being replaced (Aoun, 2017; Bond et al., 2021).

Understanding the instructors' strategies and challenges toward AI integration in teaching is essential for developing an efficient institutional support, programs for professional development, as well as framework for effective policies that foster responsible and meaningful integration of artificial intelligence in higher education.

This study aims to explore and understand their strategies and challenges toward the integration of AI as a pedagogical tool in teaching college students. This can be done through examining their perceptions that will contribute to rapid advancement of knowledge on the use of technology in teaching for its effective implementation in higher education teaching across academic contexts.

Review of related literature

The purpose of this related literature is to contextualize the research within the body of existing knowledge and support the necessity of this study. It offers methodological insights, a theoretical foundation, and aids in preventing repetition. It also advances comprehension, strengthens the researcher's credibility, and helps formulate hypotheses.

A brief introduction to AI in education

Artificial intelligence already played a vital role in this digital age. AI also posed potential in accelerating the realization of the SDG 4 (Quality Education) through innovating the teaching and learning process and addressing the challenges the education sector is experiencing. Through time, the used of AI tools to support and enhance learning has grown exponentially (Holmes et al., 2019).

A study published by Nemorin (2021) stated that many of the claims of the revolutionary potential of AI in education are based on conjecture, speculation, and optimism. Therefore, to further explore the full potentials of AI in the sector of higher education is yet to be determined.

Indeed, integrating AI in the teaching processes in the higher education is increasingly prevalent and indomitable. Also, we cannot deny the fact that AI has paved a way to bring opportunities in the teaching and learning process however challenges are still at stake.

As Artificial Intelligence continues to become a fad across the different platforms it has already been adopted to educational platforms especially the higher education domains. AI applications in higher education span intelligent tutoring systems, automated grading, predictive analytics, and natural language processing tools (Holmes et al., 2021).

Aside from that, the integration of AI pedagogical tools in higher education also seek to support instructors in managing their workloads and enhance the learning outcomes. Selwyn (2019) also noted that AI holds transformative potential for education, particularly in facilitating adaptive learning and providing real-time feedback to students.

Strategies and challenges in using AI

According to Luckin et al. (2016), the successful integration often involves aligning AI applications with instructional goals, such as using AI driven discussion platforms to foster critical thinking or deploying virtual teaching assistants to answer routine queries. To support the study of Luckin et al. (2016), Zawacki-Richter et al. (2019) added that ChatGPT and similar large language models have been used to support brainstorming, content summarization, and the generation of personalized learning resources.

Aside from that. Blikstein (2020) stated on his study that instructors who adopt learner-centered pedagogical models tend to use AI tools more innovatively often encouraging students to interact directly with AI to create knowledge.

However, despite the strategies instructors are able to employ in integrating AI pedagogical tools in teaching-learning process, challenges are still at stake that can hinder the seamless integration of AI in teaching. Based on Zawacki-Richter et al. (2019) listed two challenges instructors faced in integrating AI tools in teaching which are digital literacy and technical proficiency. With this challenge instructors faced in integrating AI, the government should take into consideration the strengthening of digital literacy and technical proficiency among them.

On a serious note, ethical and pedagogical concerns may also be considered. According to Binns (2018) and Williamson (2021) argued that over-reliance on artificial intelligence could undermine human judgement, reduce pedagogical autonomy, and exacerbate surveillance in educational environments. Furthermore, data privacy, authenticity of outputs, and potential academic dishonesty may add to the critical use of artificial intelligence.

Researchers like Ifenthaler &Yau (2020) revealed that many colleges lack the infrastructure and policy frameworks needed to support AI integration, leaving instructors to navigate the complexities alone. This only implies that one of the frequent challenges of college instructors is the institutional readiness and their support to the integration of AI in teaching.

As artificial intelligence continues to make developments across platforms, a need to strengthen professional development, policy frameworks, and reliable researches about pedagogically sound practices that empower instructors to use AI tools effectively in teaching must be strengthened.

AI education in the Philippine context

With the continuous improvement of technology, specifically with artificial intelligence, among developing countries like the Philippines, AI has become more convenient of use not just in business industry as well as in the education system.

Based on the study of Estrellado & Miranda (2023), they emphasized that the utilization of AI in the Philippine educational system has spurred scholarly discussions, highlighting both opportunities and challenges. It means that the use of artificial intelligence in the teaching and learning process has its opportunities it can give to teachers and students however there are also challenges at stake. Despite that, the study identified academic concerns related to AI in Education (AIEd), the emergence of data center hubs, potential for enhanced learning experiences, and data-driven decision-making.

In relation, the research emphasized that successful AIEd implementation requires a robust technological infrastructure, ample computing resources, and aligned policy frameworks addressing data privacy, the digital divide, and faculty training. This underscored the importance of collaboration between educators and policymakers to leverage and upgrade AI benefits while carefully establishing or reconfiguring social and ethical considerations to have a balance with the use of artificial intelligence as a support and not as a replacement for teachers.

In connection and in support with the study of Estrellado & Miranda (2023), Melchor et al. (2023) also emphasized the approaches, challenges, and readiness of Philippine tertiary classrooms in integrating artificial intelligence in the teaching and learning process.

Their study highlighted the potentials of artificial intelligence to personalize math instruction for Generation Alpha through robotics, gamification, and virtual reality, making learning more engaging. While the Philippines is progressing with AI initiatives and smart campuses, challenges remain, including infrastructure limitations, quality assurance, and data privacy concerns. The challenges presented in the research pose serious calling that if the Philippines wanted to institutionalize the integration of AI in the education system, the government must addressed them first.

The insights gathered from the different researches published by the Philippine educators will help the Philippine higher education institutions to better prepare for integrating Artificial Intelligence tools ethically and effectively not just to the core courses as well as to the other fields of education.

Statement of the problem

This study aimed to define the strategies and challenges of instructors in integrating AI pedagogical tools in teaching. It specifically answered the following questions:

1. How do we strategically implement AI in instruction to maximize learning effectiveness, and what specific adjustments must educators make in their approaches?

2. What are the key challenges, limitations, and potential concerns regarding AI integration in the learning process, particularly in terms of aligning with learning outcomes, ensuring accessibility, and optimizing time utilization?

Research methodology

This chapter presents the research design, sources of data which includes the locale of the study, population and sampling, data gathering instrument and data analysis including its ethical standards.

Research design

This study employed a phenomenological research design. Specifically, this study adopted a descriptive phenomenology that focuses on understanding their strategies and challenges encountered in integrating artificial intelligence in teaching. This approach allows an in-depth exploration of the strategies and challenges of the instructors. These would offer a holistic view of their insights with regard to their strategies and challenges in integrating AI in teaching.

Locale of the study

The study was conducted in the Divine Word College of Laoag, Laoag City Ilocos Norte with the 12 college instructors coming from the School of Arts, Sciences, and Education and School of Engineering, Architecture, and Information Technology. The selection of the participants was based on their usage of artificial intelligence in teaching their students which provide relevant and significant context for understanding their strategies and challenges in the integration of AI in teaching.

Population and sampling

The study focused on the struggles and strategies of 12 college instructors in the Divine Word College of Laoag. This population was selected to provide a detailed and localized understanding of the strategies and challenges of the college instructors in integrating AI in teaching. The sample size of 12 college instructors allows for an in-depth phenomenological exploration of individual and collective experiences, ensuring a comprehensive analysis of the strategies and challenges of instructors in integrating AI in teaching.

Data gathering instrument

This study used an online interview questionnaire designed to elicit detailed responses about the strategies and challenges of college instructors in integrating AI in teaching. The questionnaire consisted of open-ended questions that allowed participants to share their personal narratives and insights. The questions were structured to cover key areas such as their motivations, adjustments, and effectiveness of the integration of AI in teaching as well as limitations and concerns in integrating AI tools in teaching.

Data gathering procedure

The data collected through the online interview questionnaires at Google forms and were analysed using thematic analysis. This method involved systematically identifying, analyzing, and reporting patterns

within the qualitative data. The responses from the college instructors were thoroughly reviewed to become familiar with the content. Initial codes were generated by highlighting significant phrases and concepts related to the struggles and strategies experienced post-storm. These codes were then organized into overarching themes that captured the essence of the participants' experiences. Themes were reviewed and refined to ensure they accurately represented the data, allowing for a comprehensive understanding of the challenges and coping mechanisms of school heads in the aftermath of the storms. This process facilitated the extraction of meaningful insights and contributed to the overall phenomenological analysis of the study.

Ethical considerations

Ethical considerations were paramount in this study. All participants gave their informed consent, guaranteeing that they understood the goal of the study, its protocols, and their freedom to discontinue participation at any moment without facing repercussions. To safeguard the names and privacy of the instructors, strong confidentiality and anonymity measures were used. All data was safely archived and only the researcher had access to it. The participants' challenges was the main priority because talking about challenges can be embarrassing since we are already at the digital age where technology already played a vital role in our lives. As a result, the online interview questionnaires were carried out respectfully and with sensitivity, offering options for assistance where required. The appropriate institutional review board granted ethical approval, following all guidelines to ensure the research was conducted with the highest ethical standards.

Results and discussion

This part presents findings from structured interviews conducted with the 10 instructors from the School of Arts, Sciences, and Education (SASE) and School of Engineering, Architecture, and Information Technology (SEAIT) on their challenges and strategies in integrating AI tools in teaching. The data is organized according to key themes identified during the interviews.

Themes	**Categories**	**Frequency**
Theme 1: Motivations in the use of AI	Effective learning experience	6
	Efficiency in teaching experience	5
	Enhanced personalized learning	2
	Enhanced student engagement	2
Theme 2: Adjustments in the use of AI	Professional development	6
	Ethical use	3
Theme 3: Assessment on the Effectiveness of AI	Alignment to learning outcomes	7
	Accessibility of AI tools	3
	Time utilization	2
Theme 4: Limitations and Difficulties in the use of AI	Cost and access	7
	Data privacy	4
	Professional training	4
Theme 5: Effects of AI in teaching-learning process	Increased engagement	7
	Personalized learning	5

Theme 6: Concerns on the use of AI	Over reliance to AI	6
	Privacy	4
	Bias	2

Theme 1: Motivations in the use of artificial intelligence

This theme highlights the motivations of the college instructors from the School of Arts, Sciences, and Education and School of School of Engineering, Architecture, and Information Technology in the use of artificial intelligence. From effective learning experience (P3), efficiency in teaching experience (P8), enhance personalized learning (P5), and enhance student engagement (P4). Among the respondents who participated, the use of artificial intelligence results to effective learning experience inside the classroom was the most frequently mentioned. Aside from the effective learning experience, efficiency in teaching experience, enhance personalized learning, and enhanced student engagement were also mentioned. The following statements from the participants supported these consolidated data highlighting their motivations in the use of artificial intelligence:

"My motivations for integrating AI tools in the teaching-learning process include enhancing personalized learning, improving student engagement, and increasing efficiency in administrative tasks. AI can tailor content to individual needs, analyze performance data, and automate tasks like grading. In this scenario, I can focus more on student interaction and support, creating a more effective and inclusive learning environment." (P3)

"It helps us work more efficiently." (P8)

"My primary motivations for integrating AI tools in the teaching-learning process are to personalize education for individual student needs and enhance engagement through interactive experiences." (P5)

"To personalize learning, enhance student engagement, and optimize my teaching efficiency." (P4)

These motivations underscored why teachers use/integrate artificial intelligence in the teaching and learning process inside the classroom. These motivations imply that artificial intelligence can support the teaching and learning process especially on the efficiency of teaching experience, enhancement of personalized learning, and even on the enhancement of student engagement. As highlighted on the International Day of Education (2025), AI has the potential to enable new forms of teaching, learning and advanced education management. It can also enhance learning experiences and support students and teachers' tasks.

Theme 2: Adjustments in the use of artificial intelligence

This theme focuses on the adjustments of the college instructors from the School of Arts, Sciences, and Education and School of School of Engineering, Architecture, and Information Technology in the use of artificial intelligence. These adjustments involved professional development (P2) and ethical use (P7). The most frequently mentioned adjustments are the professional development that must be given to the instructors in order for them to handle artificial intelligence accurately and efficiently. The ethical use was also mentioned underscoring the importance of fair, responsible, and justifiable usage of artificial

intelligence in the teaching and learning process. Indeed, in our age nowadays, instructors must be equipped with professional skills in handling artificial intelligence tools in order for them to integrate it inside the classroom fairly and responsibly. These adjustments were further illustrated by the following statements from the participants:

"The need to undergo thorough professional development to apprehend how effective and efficient the usage of AI tools in the teaching and learning process." (P2)

"Incorporating AI tools in the teaching-learning process requires adjustments such as adapting lesson plans to integrate AI resources effectively, ensuring personalized learning experiences for students, and maintaining a balance between technology and traditional methods. Additionally, it's essential to provide training for both educators and students on using these tools responsibly and ethically while continuously evaluating their impact on student engagement and learning outcomes." (P3)

"I'm constantly adjusting how I use AI tools in teaching. I start by using them for specific tasks, then I see how it goes and make changes based on student feedback and what the data shows me. It's a continuous process of improvement" (P4)

"As an IT graduate and instructor, integrating AI tools into the teaching-learning process, several key adjustments are necessary to ensure their effective and ethical use. AI tools should be aligned with the learning outcomes and competencies of the curriculum to support meaningful and targeted learning experiences. Teachers must use AI with a clear purpose, not as a shortcut, but as a tool to enhance instruction and student understanding." (P7)

Despite the potentials of artificial intelligence in supporting effective learning experience, enhancing personalized learning, and enhancing student engagement, instructors are still adjusting to artificial intelligence integration in the teaching and learning process. These findings aligned with the existing literature on the adjustment and challenges of instructors in the integration of artificial intelligence. As given emphasis on the study of UNESCO (2021), the lack of digital literacy, fear of being replaced, and concerns about data privacy and ethical implications contribute to resistance in the integration of artificial intelligence. With these findings, institutional support for professional development of the instructors in integrating artificial intelligence must be prioritized especially that the educational landscape is continuously changing from time to time. Based on the study of Zawacki-Richter et al. (2022), training programs, administrative backing, and peer collaboration significantly improve AI adoption. This signified that institutional support is crucial in the integration of artificial intelligence in teaching. Aside from that, the ethical use of artificial intelligence must not be compromise in the teaching and learning process. According to the UNESCO (2023), teachers must grapple with concerns related to data privacy, algorithmic bias, student autonomy, and equitable access. This study contributes to the understanding of the adjustments of the instructors in the integration of artificial intelligence in teaching.

Theme 3: Assessment on the effectiveness of artificial intelligence

This theme focuses on the assessments of the effectiveness of artificial intelligence in the teaching and learning process of the college instructors from the School of Arts, Sciences, and Education and School

of School of Engineering, Architecture, and Information Technology. These assessments of effectiveness include alignment to learning outcomes (P10), accessibility of artificial intelligence tools (P3), and the time utilization (P9) they have in integrating artificial intelligence in the teaching-learning process. The alignment of learning outcomes came out as the most frequently mentioned among the given assessments. This implied that in order to assess the effectiveness of artificial intelligence, the instructors must not overlook the alignment of the learning outcomes to the AI tools they are using. By looking the alignment of learning outcomes, it keeps the focus on pedagogy and empowers both instructors and students to achieve clearly defined educational goals. In terms of accessibility of artificial intelligence tools, this should refer to an inclusive, user-friendly, and adaptable to diverse learning needs and contexts. Lastly, the utilization of time was also mentioned by the respondents signified that they have assessed the effectiveness of artificial intelligence with the time they saved. These assessments were further illustrated by the following statements of the participants:

"I assess the effectiveness of AI tools by taking a look on the alignment to the learning outcomes and to the curriculum." (P10)

"To assess the effectiveness of AI tools in the teaching-learning process, evaluate student engagement, improvements in learning outcomes, and feedback from both students and teachers. Also, consider the tools' accessibility for diverse learning needs and their integration into the existing curriculum. Analyzing these factors will help determine their overall impact on education." (P3)

"I evaluate AI tool effectiveness through student performance data, feedback, and observation of classroom impact, also considering time saved and teaching improvements." (P9)

These findings aligned with the studies of Holmes et al. (2021) which stated that the real value of AI in education lies in its ability to support and reinforce intended educational goals rather than serving as a standalone or purely technological intervention. AI should help learners achieve competencies such as critical thinking, creativity, and problem-solving, and not merely automate tasks. This implies that aligning the learning outcomes to artificial intelligence in teaching is crucial for meaningful integration. In addition, based on the research UNESCO (2021) has published stated that inclusive access to AI tools is essential for achieving SDG 4. Holmes et al. (2021) further supported that AI can automate administrative tasks and provide instant feedback, allowing teachers to spend more time on higher-order teaching tasks especially that instructors in the Philippines does not only do one task, they are obliged to do academic, administrative, research, and extension tasks. In conclusion, aligning artificial intelligence with learning outcomes ensures pedagogical relevance, ensuring accessibility promotes equity and inclusion, and optimizing time utilization enhances instructional efficiency.

Theme 4: Limitations and difficulties in the use of artificial intelligence

This theme gives emphasis on the limitations and challenges of the college instructors from the School of Arts, Sciences, and Education and School of School of Engineering, Architecture, and Information Technology in the use of artificial intelligence. These limitations and challenges include the cost and access of AI (P4), threat to data privacy (P3), and the professional training in the use of AI (P7). The most frequently mentioned limitation is the cost and access of artificial intelligence wherein participants

mentioned that reliable artificial intelligence tools are not cost efficient therefore it affects on how they access the AI tools. They also mentioned that threat to data privacy is at stake when using AI tools. In this case, professional training on the use of artificial intelligence was mentioned by the participants emphasizing that instructors must undergo training to effectively use AI tools in teaching. These limitations and challenges were further illustrated by the following statements from the participants:

"Challenges in integrating AI tools include ensuring equitable access, addressing algorithmic bias, and balancing AI with human interaction." (P4)

"Some limitations in integrating AI tools in teaching include a lack of sufficient training for educators, difficulties in aligning AI tools with curriculum standards, potential issues with data privacy and security, and variability in student access to technology. Additionally, there can be resistance to change from both teachers and students, as well as a steep learning curve associated with new technologies." (P3)

"Limited teacher training, potential overreliance by students, concerns about data privacy, and difficulty aligning AI-generated content with specific curriculum goals." (P7)

"I grew up in non-technology generation that is why I am not yet used to a more sophisticated way of teaching." (P6)

These significant limitations and challenges highlighted in this study with broader issues noted by Holmes et al. (2021), which emphasizes the repercussions of the lack of planning and long-term investment to the integration of AI tools in teaching. They further stated that artificial intelligence will become unsustainable and outdated if these long-term plans will be compromised. As for the data privacy issues, Holmes et al. (2021) further stated that many AI systems operate as black boxes making decisions that are not transparent or explainable to educators and students. To conclude, training programs, administrative backing, and peer collaboration significantly improve AI adoption. This signified that institutional support is crucial in the professional training of instructors for them to integrate artificial intelligence in teaching responsibly.

Theme 5: Effects of artificial intelligence in teaching-learning process

This theme gives emphasis on the effects of artificial intelligence in the teaching-learning process of the college instructors from the School of Arts, Sciences, and Education and School of School of Engineering, Architecture, and Information Technology. These effects include the increased of student engagement (P1) and enhance personalized learning (P6). The most frequently mentioned effect is the increased of student engagement as artificial intelligence supports the teaching and learning process. Additionally, the enhancement of personalized learning was also mentioned to support the idea that one of the effects of artificial intelligence in the teaching-learning process. These effects were supported and further illustrated by the following statements from the participants:

"It makes the teaching-learning process more engaging as it encourages students to participate actively in class. For instance, the use of PowerPoint presentation and Canva are helpful tools for teachers to teach the lesson effectively and for students to understand the lesson easily." (P1)

"AI tools can enhance the teaching-learning process in the classroom by providing personalized learning experiences, automating administrative tasks, and offering real-time feedback to students. They facilitate interactive learning, assist teachers in identifying students' strengths and weaknesses, and can deliver tailored resources based on individual needs. This ultimately helps in fostering a more engaging and efficient educational environment." (P6)

"It provides engagement towards the student and teacher." (P2)

These findings highlighted the crucial effects of integrating artificial intelligence in the teaching-learning process. These findings imply that artificial intelligence can support the teaching and learning process especially on the efficiency of teaching experience, enhancement of personalized learning, and even on the enhancement of student engagement. As highlighted on the International Day of Education (2025), AI has the potential to enable new forms of teaching, learning and advanced education management. It can also enhance learning experiences and support students and teachers' tasks. However, a need to not compromise our role as teachers is crucial in integrating AI in the teaching-learning process.

Theme 6: Concerns on the use of artificial intelligence

This theme focuses on the concerns of the college instructors from the School of Arts, Sciences, and Education and School of School of Engineering, Architecture, and Information Technology in the use/integration of artificial intelligence in teaching. The most frequently mentioned concern is the over reliance to AI (P7), followed by the privacy concerns (P8), and technological biases (P3). According to the respondents, artificial intelligence tools must only act as support, it must not take over the role of the teacher. These concerns are little to observe yet it will create big impact if overlooked or compromised. These concerns are further illustrated by the following statements from the participants:

"My concerns on the use of AI tools in the teaching-learning process include the risk of overdependence by students, potential academic dishonesty, data privacy issues, and the possibility of reducing human interaction and critical thinking. Additionally, not all teachers and students may have equal access to the necessary technology or training to use AI effectively and responsibly." (P7)

"Privacy and security of student data, potential for algorithmic bias and inequity, over-reliance on technology leading to a decline in critical thinking, and the potential for decreased human interaction and its impact on social-emotional development." (P8)

"Some concerns about the use of AI tools in the teaching-learning process include the potential for decreased human interaction, reliance on technology over critical thinking, data privacy issues, and the risk of biases in AI algorithms affecting student evaluations and learning outcomes. Additionally, there may be an uneven access to technology, which could widen educational inequalities." (P3)

These findings aligned closely with the research published by Holmes et al. (2021) which emphasized that while data-driven learning environments can enhance personalization, they also create significant risks of data misuse, surveillance, and breaches of student privacy**.** In this regard, a need to have a closer look on the roles of teacher and artificial intelligence tools in teaching-learning process must be done. Teachers will facilitate while artificial intelligence tools will support. A balance between these roles must not be compromised because without this balance, students risk losing meaningful interpersonal connections that essential in honing the social-emotional learning and critical thinking.

Conclusion

The integration of artificial intelligence in higher education presents significant opportunities and challenges as experienced by college instructors from the School of Arts, Sciences, and Education and the School of Engineering, Architecture, and Information Technology.

The instructors are primarily motivated by artificial intelligence's potential to enhance learning experiences, improve teaching efficiency, and promote personalized and engaging instruction. However, successful implementation also demands professional development and a strong emphasis on ethical use. Aside from that, assessments of AI effectiveness focus on alignment with learning outcomes, accessibility, and time optimization, reinforcing its role as a pedagogical support rather than a replacement for educators.

Despite its benefits, instructors face notable limitations such as cost, data privacy concerns, and insufficient training. Moreover, there are persistent concerns about overreliance on AI, reduced human interaction, and algorithmic bias.

Furthermore, curriculum management must prioritize creating a supportive environment for AI integration in higher education. This involves professional development focused on effective and ethical AI use, alongside clear institutional guidelines addressing data privacy, bias mitigation, and academic integrity. Fostering collaboration among instructors from diverse disciplines will facilitate the sharing of best practices. Investment in accessible AI infrastructure and a commitment to ongoing evaluation are essential to ensure equitable access and continuous improvement.

Ultimately, the goal is to promote a balanced approach where AI serves as a tool to enhance, not replace, the human element of teaching. Curriculum design should emphasize meaningful interaction, critical thinking, and the unique role of educators as mentors and guides. By focusing on alignment with learning outcomes, accessibility, and time optimization, curriculum management can ensure that AI integration enriches the educational experience for all students while preserving the heart of teaching.

The integration of AI in higher education necessitates a re-evaluation of established pedagogical frameworks, shifting towards student-centered learning and redefining the educator's role as facilitator and mentor. This requires exploring the ethical implications of AI, engaging with critical theories to address potential biases and ensure fairness. Furthermore, traditional assessment practices must evolve to incorporate personalized feedback and alternative methods that capture holistic learning.

Understanding AI's impact on cognitive development, preparing students for the future of work, and prioritizing the social and emotional dimensions of learning are crucial theoretical considerations for effectively integrating AI and enhancing the overall educational experience.

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